FOREST ROAD EXCISE TAX SUMMARY SHEET

Region: Pacific Cascade

Timber Sale Name: Old #6

Application Number: 30-075782

Excise Tax Applicable Activities

Construction: 1,552 **linear feet**
Road to be constructed (optional and required) but not abandoned

Reconstruction: 2,010 **linear feet**
Road to be reconstructed (optional and required) but not abandoned

Abandonment: ____**linear feet**
Abandonment of existing roads not reconstructed under the contract

Deactivation: _____ **linear feet**
Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: _____ **linear feet**
Existing road to receive maintenance work (specifically required by the contract) prior to haul

Excise Tax Exempt Activities

Temporary Optional Construction: ____ **linear feet**
Optional roads to be constructed and then abandoned

Temporary Optional Reconstruction: ____ **linear feet**
Optional roads to be reconstructed and then abandoned

New Abandonment: ____ **linear feet**
Abandonment of roads constructed or reconstructed under the contract

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

OLD #6

ROAD PLAN

SECTION 3, TOWNSHIP 12 NORTH, RANGE 06 WEST, W.M.
SECTION 25, 36, TOWNSHIP 13 NORTH, RANGE 06 WEST, W.M.
PACIFIC COUNTY

PACIFIC DISTRICT

AGREEMENT NO.: 30-075782

CONTRACT ADMINISTRATOR: Dean Adams

DATE: 02/01/2004

STAFF ENGINEER: Matthew T. Miskovic

DRAWN & COMPILED BY: Alicia Compton

SECTION 0 – SCOPE OF PROJECT

This project includes but is not limited to optional construction including:

clearing;
grubbing;
right-of-way debris disposal;
excavation and/or embankment to subgrade;
landing construction;
acquisition and installation of drainage structures;
acquisition, manufacture, and application of rock;
grass seeding.

This project also includes but is not limited to reconstruction and optional reconstruction including:

landing construction;
acquisition and installation of additional drainage structures;
acquisition and installation of 144" x 56' CMP at station 56+05 on the RCP Mainline;
compaction of road surface;
acquisition, manufacture, and application of rock;
grass seeding.

SECTION 1 - GENERAL CLAUSES

1.1-1
Clauses in this plan apply to all construction or reconstruction including landings unless otherwise noted.

1.1-2
Reconstruction of the following road is required. Road shall be reconstructed on the State's location and in accordance with this Road Plan.

Road	Stations	Type
RCP Mainline	54+50 to 59+00	Reconstruction

1.1-3
Construction or reconstruction of the following roads is not required. Roads used by the Purchaser shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.

Road	Stations	Type
RCP 1100	0+00 to 3+00	Reconstruction
RCP 1120	0+00 to 15+52	Construction
RCP 1200	0+00 to 12+60	Reconstruction

1.1-4

If the Purchaser desires a road location or design change, a revised Road Plan shall be submitted to the State for consideration.

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock, subsurface springs, saturated ground, and unstable soil.

1.2-1

The construction or reconstruction of any roads specified herein shall not be permitted between September 30 and May 1 unless authority to do so is granted, in writing, by the Contract Administrator.

1.2-2

Purchaser shall not use roads constructed or reconstructed under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches, and culvert installations shall be completed and are subject to written approval by the Contract Administrator prior to rock application.

1.3-1A

Hauling shall be suspended when wheel track rutting exceeds 6 inches unless Purchaser elects to correct the situation at his/her own expense. Corrective measures and continued operations are subject to written approval by the Contract Administrator.

1.4-2

The following road shall be constructed in accordance with construction stakes.

Road	Stations
RCP Mainline	54+50 to 59+00

1.4-3

Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

1.5-1

Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designated Road Maintainer) shall be performed in accordance with Forest Access Road Maintenance Specifications.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on TYPICAL SECTION SHEET.

SECTION 3 - GRUBBING

3-1

All stumps shall be removed that fall between grubbing limits shown on the TYPICAL SECTION SHEET. Those outside the grubbing limits but with undercut roots shall also be removed.

3-2

Grubbing limits are defined as the entire area between the external limits shown on the TYPICAL SECTION SHEET.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume within the grubbing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to the application of rock.

4.2.3-3

Right-of-way debris shall not be placed against standing timber.

4.2.3-4

Right-of-way debris shall be scattered outside the grubbing limits.

SECTION 5 - EXCAVATION

5.1-1

Roads shall be constructed or reconstructed in accordance with dimensions shown on the TYPICAL SECTION SHEET.

5.1-3

Road grade and alignment shall conform to the State's marked location. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are: 18 percent favorable and 14 percent adverse. Minimum radius curve is 60 feet.

5.1-7

Roads shall be constructed or reconstructed to the dimensions shown on the TYPICAL SECTION SHEET, within the tolerance listed below. Tolerance classes for each road are listed on the TYPICAL SECTION SHEET.

Tolerance Class	A	B	C
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table:

Material Type	Excavation Slope Ratio
Common Earth (on side slopes of 55%)	1:1
Common Earth (55% to 70% sideslopes)	¾:1
Common Earth (on slopes over 70%)	½:1
Fractured or loose rock	½:1
Hardpan or solid rock	¼:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10

Embankments shall be widened as follows:

Height at Centerline	Subgrade Widening
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table:

Material Type	Embankment Slope Ratio
Common Earth and Rounded Gravel	1½:1
Angular Rock	1¼:1
Sandy Soils	2:1

5.1-12

Organic material shall be excluded from embankment.

5.1-15B

Waste material may be deposited adjacent to the road prism on side slopes up to 45 percent if the waste material is compacted and more than 100 feet away from live streams. On side slopes between 45 and 55 percent, all excavation not needed for embankment shall be end hauled or pushed to designated embankment sites. On side slopes of 55 percent or more, all excavation shall be end hauled or pushed to designated embankment sites. All waste embankments shall be compacted in layers not exceeding 2 feet.

5.1-15C

When constructing landings, waste material and embankment shall not be placed on side slopes steeper than 45%.

5.1-16B

The amount of material to be contained in a waste area shall be at the discretion of the Contract Administrator.

5.1-16C

On the following road, all excavated material shall be end hauled to designated waste areas.

End Haul/Waste Material Disposal

Road	Stations	Waste Area Location	Remarks
RCP Mainline	54+50 to 59+00	RCP 100 @ 0+00 to 1+00	Block access to road

5.1-21

Waste material shall not be deposited within 50 feet of a cross drain culvert installation.

5.1-25

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location shall be subject to written approval of the Contract Administrator.

5.2-1

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the grubbing limits, or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

5.3-2B

On the following road, all embankment shall be compacted full width in 24 inch lifts by three coverages with a vibratory drum roller weighing at least 14,000 pounds at a maximum operating speed of 3 mph. For embankment segments too narrow to accommodate a drum roller, a plate compactor shall be used. With a plate compactor three full coverages shall be made in 12 inch lifts.

Road	Stations
RCP Mainline	54+50 to 59+00

5.4-1

Silt-bearing runoff shall not be permitted to go into streams.

5.4-2

Accomplish sediment removal through silt traps, silt fences, settling ponds, or other methods as approved, in writing, by the Contract Administrator.

5.4-3A

On the following roads, Purchaser shall furnish and evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 40 pounds per acre. The date of application is subject to approval by the Contract Administrator.

Mixture Percent by Weight	Minimum Percent Germination
50% Fescue, Red	90% Germination
25% Ryegrass, Perennial	90% Germination
15% Bentgrass	85% Germination
10% Clover, White and White Dutch (inoculated)	90% Germination

Weed seed shall not exceed 0.5% by weight.

Seed shall be furnished in standard containers on which the following shall be shown:

1. Common name of seed
2. Net weight
3. Percent of purity
4. Percentage of germination
5. Percentage of weed seed and inert material

Required seed not spread by the termination of this contract shall become property of the State. The amount owed to the State shall be as follows, less the amount spread.

Road	Stations	Seed Quantity (lbs)
RCP Mainline	54+50 to 59+00	50
RCP 1120	0+00 to 15+52	60
RCP 100	0+00 to 1+00	20

5.5-4

Constructed subgrades shall be compacted full width except ditch prior to rock application. Compaction shall be by a smooth-drum vibratory roller weighing at least 14,000 pounds. Four complete passes shall be made at a maximum operating speed of 3 mph.

5.5-5

Finished subgrade shall be crowned as shown on the TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

SECTION 6 - DRAINAGE

6.2.1-1

Purchaser shall furnish, install, and maintain aluminized culverts (meeting ASTM A 819, AASHTO M-274 aluminized steel Type 2 and AASHTO M-36 specifications) or on culverts 24 inches or less corrugated polyethylene pipe (AASHTO specification No. M-294-S) may be used as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.1-1B

Purchaser shall furnish, install, and maintain corrugated polyethylene pipe (AASHTO specification No. M-294 Type S) and on culverts over 24 inches, aluminized culverts (meeting ASTM A 819, AASHTO M-274 aluminized steel Type 2 and AASHTO M-36 specifications) as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.1-2

Annular corrugated bands and culvert ends shall be used on metal culverts. On culverts 24 inches and smaller,, bands shall have a minimum width of 12 inches. On culverts over 24 inches, bands shall have a minimum width of 24 inches. Manufacturer's approved connectors shall be used for corrugated polyethylene pipe.

6.2.1-5

On required roads: culverts, downspouts, flumes, bands, and gaskets as listed on the CULVERT LIST which are not installed shall become property of the State.

6.2.1-5B

Purchaser shall provide rubberized gaskets for all culverts with a vertical rise greater than 42 inches.

6.2.2.1-1A

Culvert, downspout, flume, and energy dissipator installation shall be in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL and the Corrugated Polyethylene Pipe Association "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings" or the National Corrugated Metal Pipe Association "Installation Manual for Corrugated Steel Drainage Structures."

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2.4-1

Installations of culverts 30 inches in diameter and over shall be subject to written approval by the Region Engineer or their designee prior to making backfill.

6.2.2.4-1B

On the following road, installation of culvert shall be in accordance with Hydraulics Project Approval and the CULVERT INSTALLATION DETAIL.

Road	Station
RCP Mainline	56+05

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed concurrently with construction of the subgrade. Ditches shall drain to culverts, ditchouts, and natural drainages.

6.4-1

Catch basins shall be constructed to resist erosion in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1

Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts.

6.5-2B

On the following road, embankment slopes adjacent to culvert inlets and outlets shall be armored with light loose riprap as listed on the ROCK LIST.

Road	Station
RCP Mainline	56+05

SECTION 7 - ROCK

7.1-1

Rock for construction and/or reconstruction under this contract may be obtained from a source on State land as listed below at no charge to the Purchaser. Development and use shall be in accordance with a written "Development Plan" prepared by the State. A copy of the written plan is available upon request from the Pacific Cascade Region office. Upon completion of operations, the rock source shall be left in the condition specified in said plan, subject to approval by the Contract Administrator. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using or desire to use this rock source, a joint operating plan shall be developed. All parties shall follow this plan.

Source	Location
Walville Quarry	SE ¼ Sec. 23, T13N, R06W, W.M.

7.1-1C

Rock for reconstruction under this contract may be obtained from any commercial source as approved in writing by the Contract Administrator.

7.2.1-4

Rock shall meet the following specifications for gradation and quality. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

7.2.1.1-3

1½ INCH MINUS CRUSHED ROCK

% passing 1½" square sieve	100%
% passing 1" square sieve	70 - 90%
% passing ⅝" square sieve	50 - 80%
% passing ¼" square sieve	30 - 50%
% passing U.S. #40 sieve	3 - 18%
% passing U.S. #200 sieve	7.5% Max.

All percentages are by weight.

7.2.1.1-7

4 INCH MINUS JAW RUN ROCK

% equal to, or smaller in one dimension than the specified size	100%
% passing U.S. #40 sieve	16% Max.
% passing U.S. #200 sieve	5% Max.

All percentages are by weight.

7.2.1.1-7C

QUARRY SPALLS

% passing 8" square sieve	100%
% passing 3" square sieve	40% Max.
% passing ¾" square sieve	10% Max.
% passing U.S. #40 sieve	16% Max.
% passing U.S. #200 sieve	5% Max.

All percentages are by weight.

7.2.1.1-7F

2 ½ FOOT MINUS ROCK

% passing 30" square sieve..... 100%
% passing 12" square sieve.....84% Max.
% passing 4" square sieve.....50% Max.
% passing 1.25" square sieve.....16% Max.

All percentages are by weight.

7.2.1.2-2

Pit run rock shall contain no more than 5 percent by weight of vegetative debris, dirt, or trash.

7.2.3-1

Measurement of the rock shall be on a cubic yard truck measure basis. Each truck box shall be measured by the Contract Administrator prior to rock hauling. The Contract Administrator shall periodically require that a load be flattened off and its volume calculated. An average of such volumes for each truck shall be used to tally the volume to be hauled. The Purchaser shall provide and maintain load tally sheets for each truck and shall give them to the Contract Administrator upon request.

7.4.2-1

Apply at least the minimum rock quantity as shown on ROCK LIST. Rock shall meet the specifications on the ROCK LIST.

7.4.2-7

Turnarounds, turnouts, and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8

Each lift of rock shall be crowned as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.3-1

Rock shall be mixed, compacted, and graded in sections not to exceed ½ mile in length. Water shall be added in quantities to facilitate compaction. If directed by the Contract Administrator, a minimum of 6 gallons of water per cubic yard of rock shall be applied.

7.4.3-2

Rock shall be spread and compacted full width in lifts not to exceed 12 inches uncompacted depth. Compaction shall be by pneumatic-tired, steel-wheeled, or smooth drum vibratory roller weighing at least 14,000 pounds. Four complete passes at a maximum speed of 3 mph shall be made on each lift.

7.4.4-1

Riprap shall consist of angular stone placed on slopes, as indicated in this plan, and as shown on the CULVERT INSTALLATION DETAIL or as directed by the Contract Administrator.

Loose Riprap - The stone for loose riprap shall be hard, sound and durable. It shall be free from segregation, seams, cracks, and other defects tending to destroy its resistance to weather. Loose riprap shall be free of rock fines, soil, or other extraneous material.

a. Heavy Loose Riprap - Shall meet the following requirements for grading:

At Least/Not More Than	Minimum Size	Maximum Size
40% / 90%	1 Ton (½ cu. yd.)	--
70% / 90%	300 lbs. (2 cu. ft.)	--
10% / 30%	--	50 lbs.

b. Light Loose Riprap - Shall meet the following requirements for grading:

At Least/Not More Than	Size Range	Maximum Size
20% / 90%	300 lbs. to 1 ton	--
80% / --	50 lbs. to 1 ton	--
10% / 20%	--	50 lbs.

7.4.4-2

Riprap shall be set in place in conjunction with construction of the embankment. Placement shall be by zero drop height methods only.

SECTION 9 - ROAD AND LANDING DEACTIVATION

9.2-1

Purchaser shall reduce or relocate landing debris, in a manner approved, in writing, by the Contract Administrator, to avoid landing failures and potential debris slides.

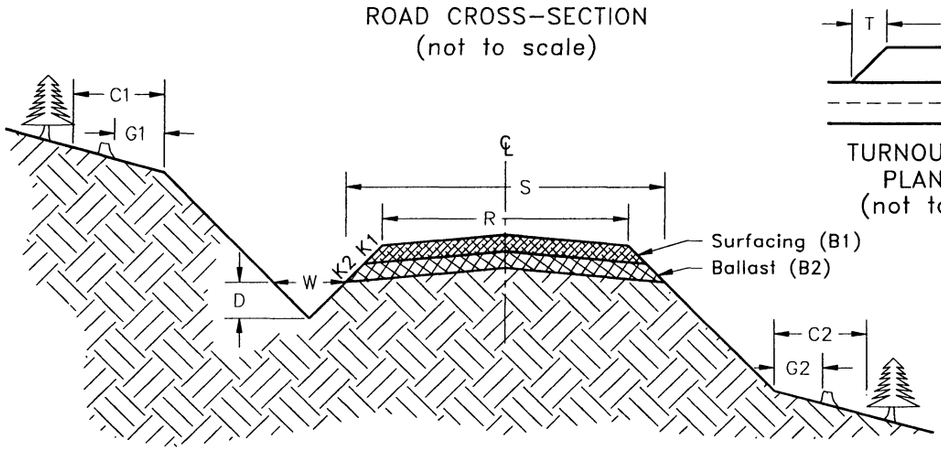
9.2-2

Purchaser shall provide for drainage of the landing surface as approved, in writing, by the Contract Administrator.

9.2-3

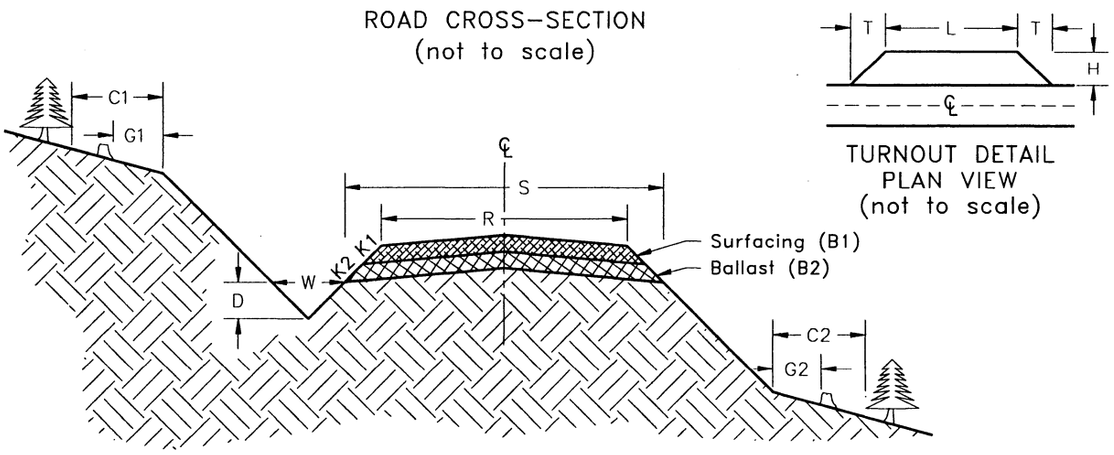
Landing embankments shall be sloped to original construction specifications.

TYPICAL SECTION SHEET



Road Number	From Station	To Station	Tolerance Class	Subgrade Width	Road Width	Ditch		Crown in. @ CL	Grubbing Limits		Clearing Limits	
						Width	Depth					
				S	R	W	D		G1	G2	C1	C2
RCP Mainline	54+50	59+00	A	20.5'	16'	3'	1'	4"	-	-	-	-
RCP 1100	0+00	3+00	C	-	12'	-	-	4"	-	-	-	-
RCP 1120	0+00	15+52	C	15'	12'	3'	1'	4"	5'	5'	10'	10'
RCP 1200	0+00	12+60	C	-	12'	-	-	4"	-	-	-	-

ROCK LIST



BALLAST

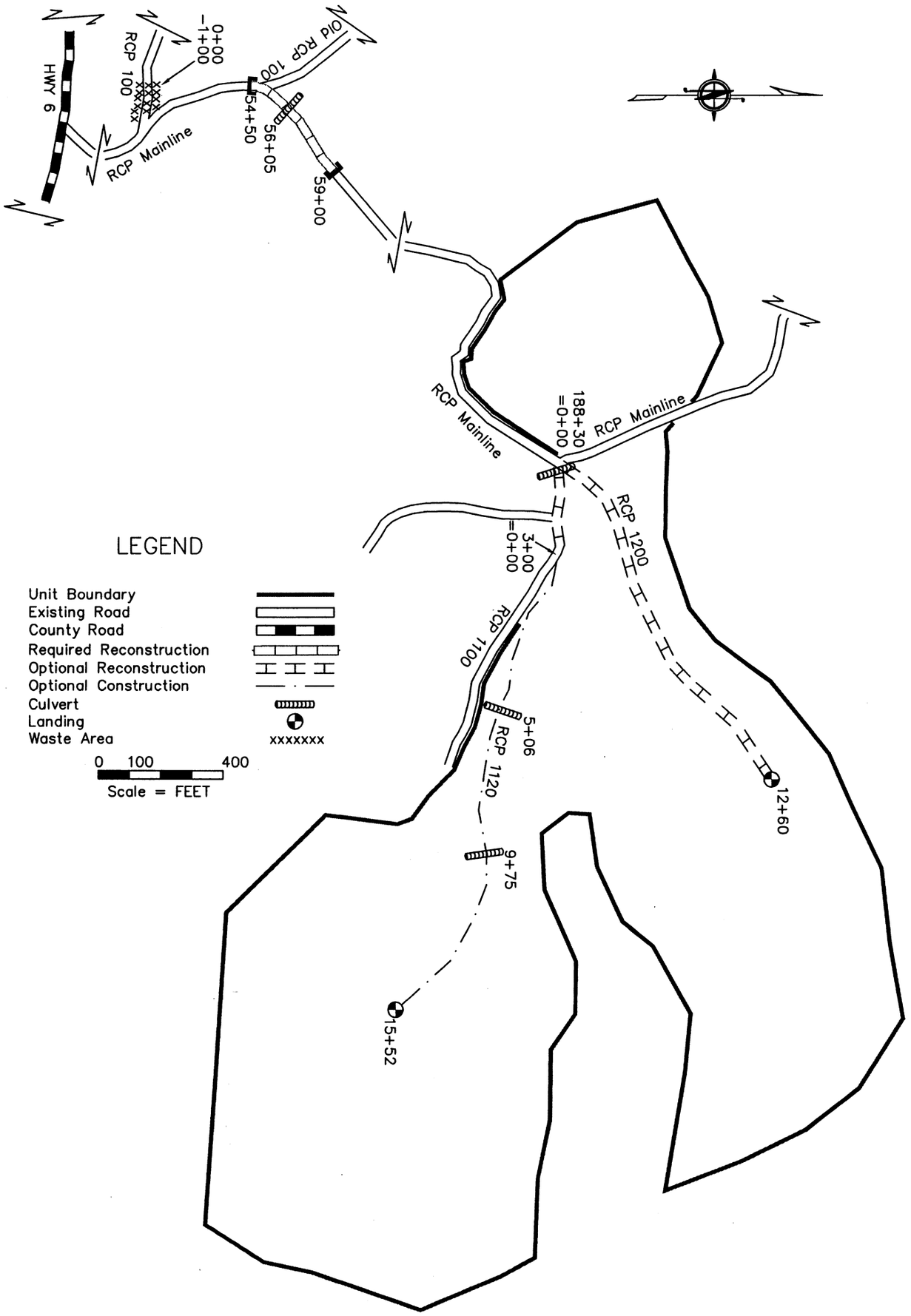
Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout Length	Turnout Width	Turnout Taper
			K2	B2					L	H	T
					LIGHT LOOSE RIPRAP			Walville Quarry or commercial source			
RCP Mainline	56+05		*Culvert Fill				40				
	56+05		Embankment Armor				60				
					QUARRY SPALLS						
RCP Mainline	56+05		*Culvert Fill				80				
	56+05		Embankment Armor				20				
RCP 1100	Culvert / energy dissipator						1				
RCP 1120	Culvert / energy dissipator						2				
					PIT RUN						
RCP Mainline	56+05		*Culvert Fill				80				
	54+50	59+00	1 ½:1	12"	90	4.50	405				
RCP 1100	Culvert backfill						30				
					1 ½ INCH MINUS CRUSHED			Commercial Source			
RCP Mainline	54+50	59+00	1 ½:1	6"	39	4.50	176				
	56+05		Culvert Bedding				514				
					4 INCH MINUS JAW RUN			Walville Quarry or commercial source			
RCP 1100	0+00	3+00	1 ½:1	8"	40	3.00	120				
RCP 1120	0+00	15+52	1 ½:1	12"	63	15.52	978				
RCP 1200	0+00	12+60	1 ½:1	8"	40	12.60	504				

*Combine quantities to meet clause 7.2.1.1-7F

LIGHT LOOSE RIPRAP TOTAL 100 Cubic Yards
QUARRY SPALLS TOTAL 103 Cubic Yards
PIT RUN TOTAL 515 Cubic Yards
1 ½ INCH MINUS CRUSHED 690 Cubic Yards
4 INCH MINUS JAW RUN TOTAL 1,602 Cubic Yards

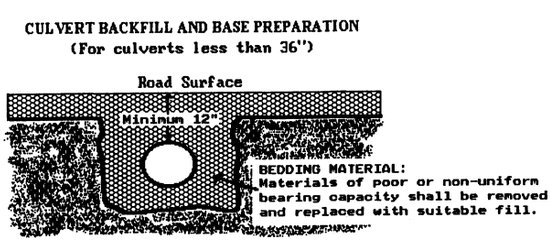
OLD #6

ROAD PLAN MAP



CULVERT LIST

Road Number	Location	Culvert Dia.	Culvert Gauge	Length (ft) Culvert	Length (ft) Downspt	Length (ft) Flume	Riprap (C.Y.) Inlet	Riprap (C.Y.) Outlet	Riprap (C.Y.) Type	Backfill Material	Placement Method	Const. Staked	Remarks
			If Steel										
RCP Mainline	56+05	144"	10	56	-	-	30	30	LL	1½" / SL		Yes	
RCP 1100	0+00	18"	-	50	-	-	½	½	QS	PR	-	-	
RCP 1120	5+06	18"	-	28	-	-	½	½	QS	NT	-	-	
	9+75	18"	-	28	-	-	½	½	QS	NT	-	-	No skew

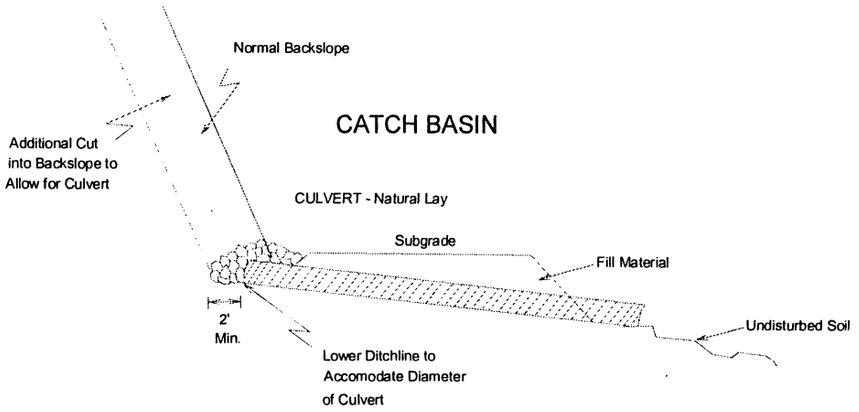


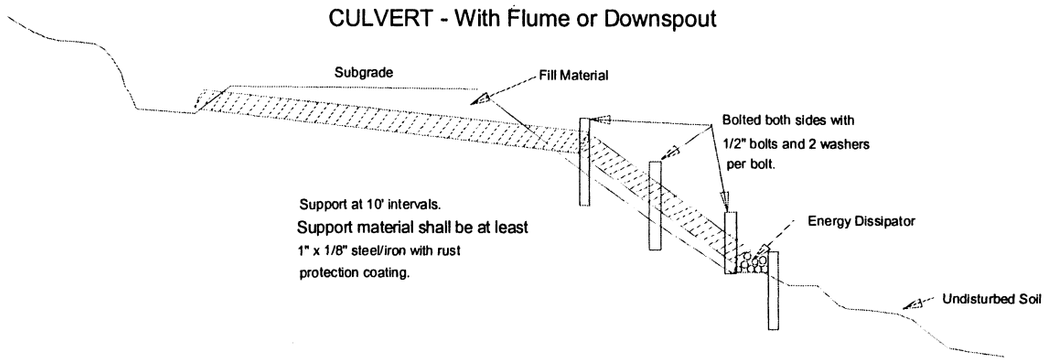
Key:

1½" - 1 ½ Inch Minus Crushed Rock
PR - Pit Run Rock
NT - Native (bank run)
SL - Select Fill
HL - Heavy Loose Riprap
LL - Light Loose Riprap
Flume - Half round pipe
Downspout - Full round pipe

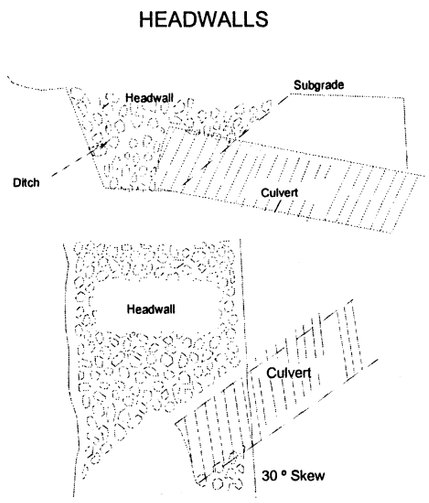
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 2)

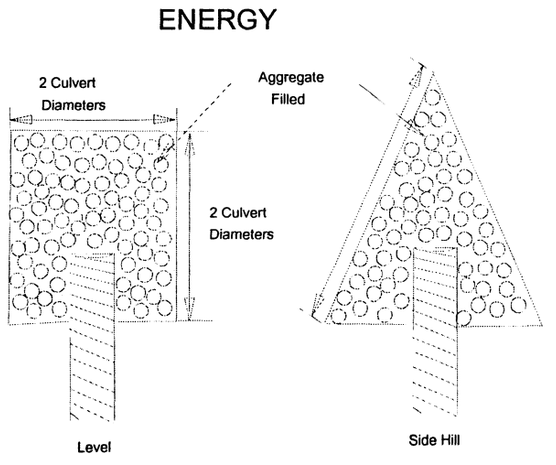




Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.



Dissipator Specifications:
Depth: 1 culvert diameter
Aggregate: as specified in the CULVERT LIST.

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

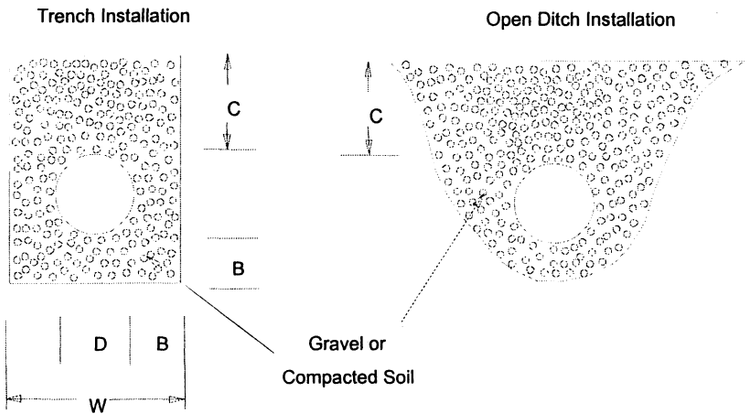
1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.

2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.

3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.

4. Site conditions and availability of bedding materials often dictate the type of installation method used.

5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



MINIMUM DIMENSIONS
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

FOREST ACCESS ROAD
MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION AND RECONSTRUCTION (Prior to acceptance to the contract or acceptance on a timber sale).

A. Cuts and Fills
   1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1½:1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
   2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
   3. Undesirable slide materials and debris shall not be mixed into the surface material.

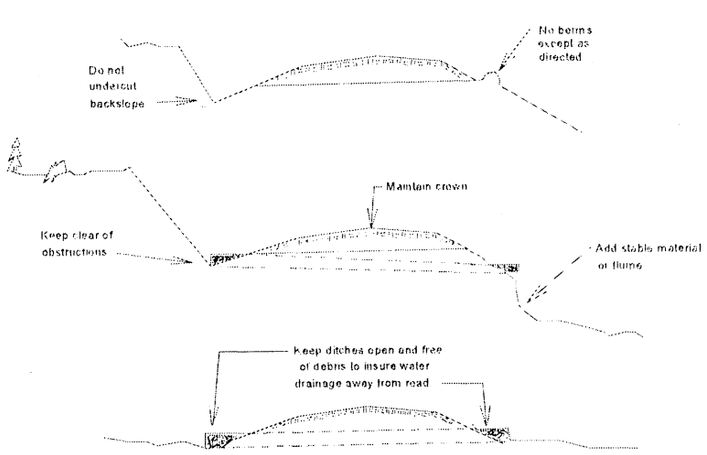
B. Surface
   1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
   2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
   3. Watering may be required to control dust and to retain fine surface rock.
   4. Desirable surface material shall not be bladed off the roadway.
   5. Replace surface material lost or worn away.
   6. Remove berms except as directed by the State.
   7. Barrel spread soft spots to prevent degradation of geotextile.

C. Drainage
   1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
   2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
   3. Add stable material at the outlet end of the culvert as needed to stabilize the stream bed.
   4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
   5. Keep silt bearing surface runoff from getting into live streams.

D. Structures
   Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.

E. Termination of Use or End of Season
   Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.

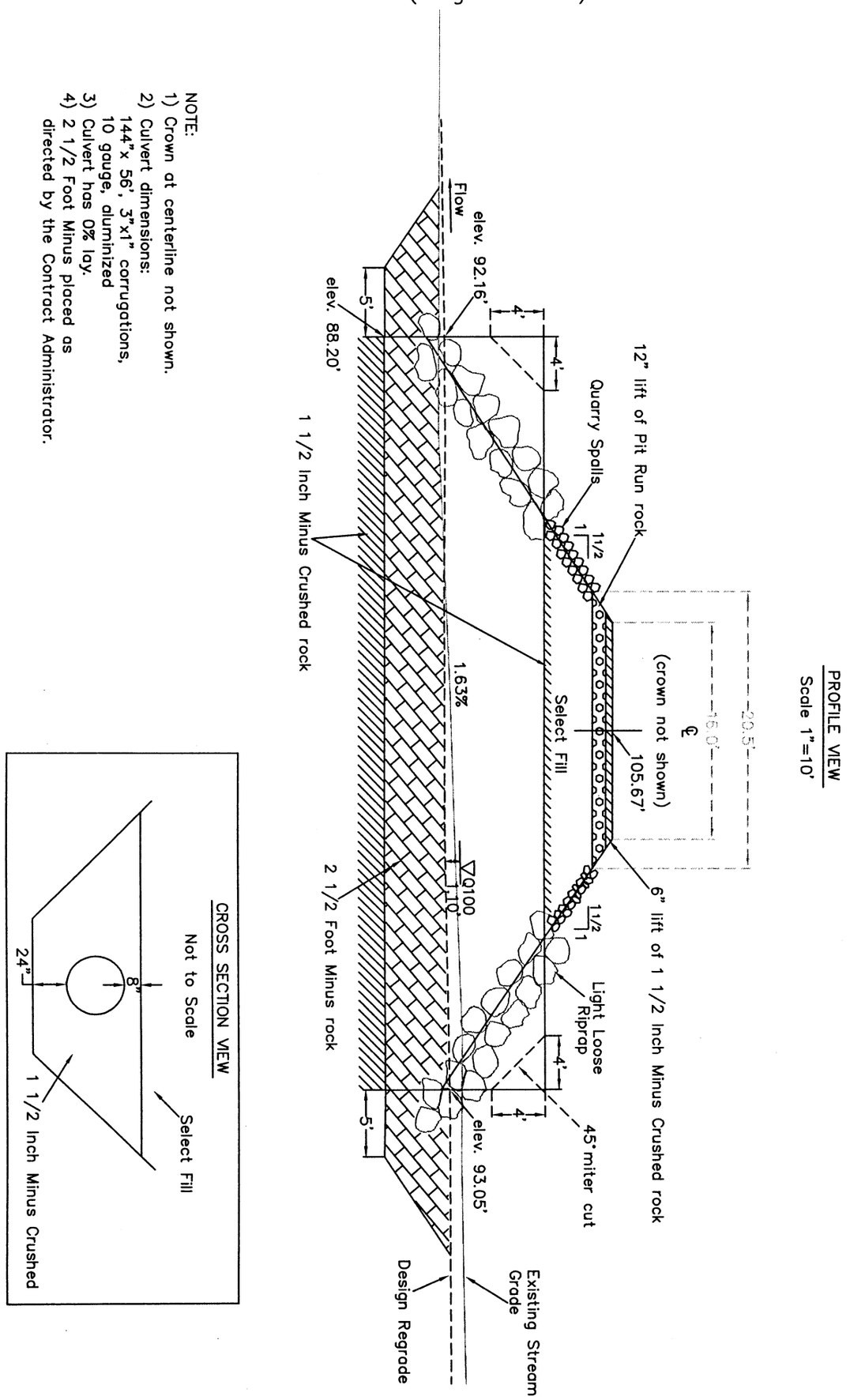
F. Debris
   Remove fallen timber, limbs, and stumps from the slopes or roadway.



CULVERT INSTALLATION DETAIL

RCP Mainline @ station 56+05

(Page 1 of 2)



NOTE:
1) Crown at centerline not shown.
2) Culvert dimensions:
144"x 56', 3"x1" corrugations,
10 gauge, aluminized
3) Culvert has 0% lay.
4) 2 1/2 Foot Minus placed as directed by the Contract Administrator.

Washington State Department of Natural Resources – Central Region	Date: JANUARY 20, 2004
	Designed by: Matthew T. Miskovic
Peer Review Initials/date:	f: \engineer\sales\old#6\culinRCPML–5605–1.dwg
Initials Date Intials Date	Drafted by: Alicia Compton

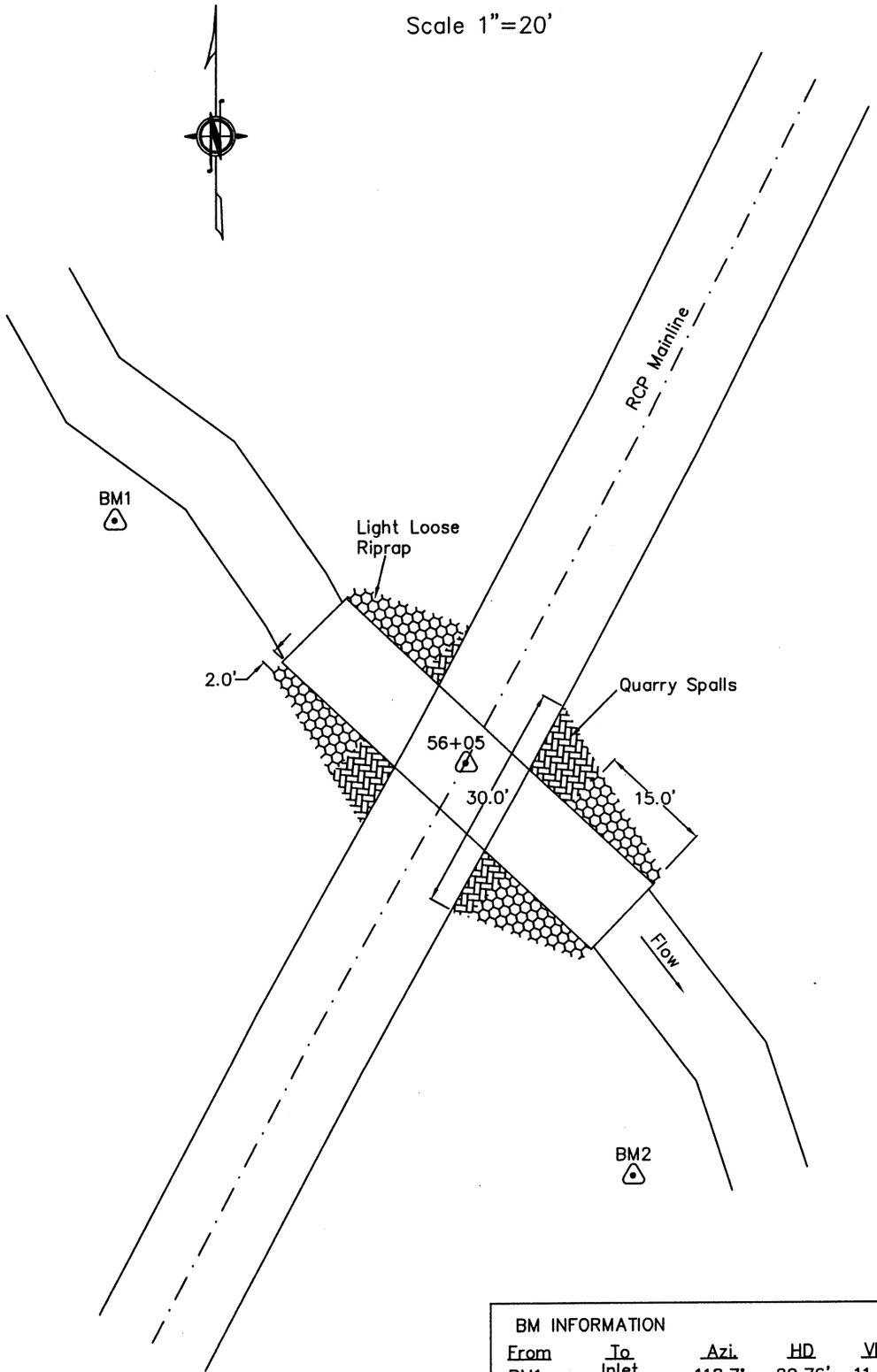
CULVERT INSTALLATION DETAIL

RCP Mainline @ station 56+05

(Page 2 of 2)

PLAN VIEW

Scale 1"=20'



BM INFORMATION

From	To	Azi.	HD	VD
BM1	Inlet Invert	118.7°	29.76'	−11.80'
BM2	Outlet Invert	357.9°	34.24'	−10.35'

BM1 is 5" dia. Alder stump.
Elev. = 100.00'

BM2 is 15" dia. Douglas fir
Elev. = 98.55'

Note: 0° declination

DEPARTMENT OF NATURAL RESOURCES - CENTRAL REGION

FORM 9-87(Rev. 12-02)

SUMMARY - Road Development Costs

DISTRICT: Pacific

SALE/PROJECT NAME: Old #6 CONTRACT NUMBER: Unknown

LEGAL DESCRIPTION: Sections 25 & 36 Township 13 North, Range 06 West W.M.

ROAD NUMBER:		RCP Mainline	RCP 1100, RCP 1120, RCP 1200
ROAD STANDARD:		Mainline (14' R.S.)	Secondary Mainline (12' R.S.)
NUMBER OF STATIONS:		4.50	31.12
SIDESLOPE:		15-35%	10-40%
CLEARING AND GRUBBING:		$0	$1,543
EXCAVATION AND FILL:		$10,800	$3,384
ROCK TOTALS (Cu. Yds.):			
Ballast:	1602	$0	$8,234
Surface:	690	$9,833	$0
Riprap:	100	$554	$0
Pit Run:	588	$2,217	$11
CULVERTS AND FLUMES:		$13,500	$1,290
STRUCTURES:		$0	$0
GENERAL EXPENSES:		$3,321	$1,446
MOBILIZATION:		$1,325	$1,325
TOTAL COSTS:		$41,550	$17,235
COST PER STATION:		$9,233	$554

NOTE: This appraisal has no allowance for profit and risk.

TOTAL (All Roads) = $58,785

SALE VOLUME MBF = 3,100

TOTAL COST PER MBF = $18.96

Plans to be furnished by:

Plan only: STATE

Plan-profile:

Compiled by: M. Miskovic Date: 01/27/04

Checked by: _____ Date: _____

Region Engineer: _____ Date: _____

Div of Engr.: _____ Date: _____

REMARKS: Page 2 (RCP Mainline) includes four stations of reconstruction associated with a fish passable culvert installation.

CENTRAL REGION - ROAD COST ESTIMATE

SALE NAME: Old #6 CONTRACT NUMBER: N/A

I. CLEARING AND GRUBBING:

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
RCP Mainline			1.00		$40	1.00	4.50	$0

Clear and Grub TOTAL = $0

II. EXCAVATION:

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
RCP Mainline		1.00		$88	1.00	4.50	$0

*End Haul, Over Haul, Large Fills/Cuts	Estimated Vol. (cy)	No. of Equip. Days	Cost/day	Sub Total
End Haul/ Over Haul	500	3	$1,800	$5,400
Large Fills/ Cuts	500	3	$1,800	$5,400

Excavation TOTAL = $10,800

III. BALLAST AND SURFACING :

Ballast source: Wallville Quarry
Surface source: Commercial Quarry
Riprap source : Wallville Quarry
Pit Run Source: Wallville Quarry

Description	cu.yds/sta x stations =	cubic yards
Ballast (4"-)		0
Surfacing (1 1/2"-)		690
Riprap		100
Pit Run		585

UNIT COSTS	Ballast	Surfacing	Riprap	Pit Run
Drill & Shoot				
Dig and load	$1.00		$2.00	$1.00
Crushing	$1.50			
Purchase		$7.00		
Haul *	$1.54	$6.00	$1.54	$1.54
Spread	$0.80	$0.80	$2.00	$0.80
Compact	$0.45	$0.45		$0.45
Strip				
Reclamation				
TOTAL ($/cy)	$5.29	$14.25	$5.54	$3.79

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

R.T. Miles = 5.0
Ave. Speed = 25
Delay (Hrs.)= 0.2
Cost / Hour = $77.00
CY / Load = 20

Ballast (4"-)	0	Cu. yds @	$5.29	/cu. yd =	$0
Surfacing (1 1/2	690	Cu. yds @	$14.25	/cu. yd =	$9,833
Riprap	100	Cu. yds @	$5.54	/cu. yd =	$554
Pit Run	585	Cu. yds @	$3.79	/cu. yd =	$2,217

Rock total = $12,604

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter	No/Length	Cost/ft	Sub-total
144" x 56' aluminized culvert	1	10	144"	56	$235.00	$13,160
Bands & Gaskets	1 - 144" x 24" band & Gasket					$340

Culvert total = $13,500

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total

Structure total = $0

Sub-TOTAL = $36,904

VI. GENERAL EXPENSES: Overhead & General Exp. Add 9% $3,321

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	100	6	$600
Grader	400	1	$400
Compactor	400	1	$400
Excavator	450	1	$450
Dozer D8)	400	1	$400
Front end loader	400	1	$400
Rock crusher	$1,500	0	$0
Dozer (D5)	$240	0	$0

Total Mobilization = $2,650 Mobilization sub-total = $1,325

Road No. RCP Mainline
Standard: Mainline (14' R.S.)
Stations: 4.50

SHEET TOTAL = $41,550

By: M. Miskovic

Date: 01/27/04

CENTRAL REGION - ROAD COST ESTIMATE

SALE NAME: Old #6 CONTRACT NUMBER: N/A

I. CLEARING AND GRUBBING:

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
RCP 1100, RCP 1120, RCP 1200	20%	35	1.00	2.77	$40	1.00	9.00	$997
	30%	35	1.00	3.90	$40	1.00	3.50	$546
	no C & G						18.62	

Clear and Grub TOTAL = $1,543

II. EXCAVATION:

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
RCP 1100, RCP 1120, RCP 1200	20%	1.00	2.50	$88	1.00	9.00	$1,980
	30%	1.00	4.56	$88	1.00	3.50	$1,404

*End Haul, Over Haul, Large Fills/Cuts	Estimated Vol. (cy)	No. of Equip. Days	Cost/day	Sub Total
End Haul/ Over Haul				$0
Large Fills/ Cuts				$0

Excavation TOTAL = $3,384

III. BALLAST AND SURFACING :

Ballast source: Wallville Quarry
Surface source: Commercial Quarry
Riprap source : Wallville Quarry
Pit Run Source: Wallville Quarry

Description	cu.yds/sta x stations =	cubic yards
Ballast (4"-)		1,602
Surfacing (1 1/2"-)		0
Riprap		0
Pit Run		3

UNIT COSTS	Ballast	Surfacing	Riprap	Pit Run
Drill & Shoot				
Dig and load	$1.00		$2.00	$1.00
Crushing	$1.50			
Purchase		$7.00		
Haul *	$1.39	$6.00	$1.39	$1.39
Spread	$0.80	$0.80	$2.00	$0.80
Compact	$0.45	$0.45		$0.45
Strip				
Reclamation				
TOTAL ($/cy)	$5.14	$14.25	$5.39	$3.64

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

R.T. Miles =	4.0					
Ave. Speed =	25	Ballast (4"-)	1602	Cu. yds @	$5.14 /cu. yd =	$8,234
Delay (Hrs.)=	0.2	Surfacing (1 1/2	0	Cu. yds @	$14.25 /cu. yd =	$0
Cost / Hour =	$77.00	Riprap	0	Cu. yds @	$5.39 /cu. yd =	$0
CY / Load =	20	Pit Run	3	Cu. yds @	$3.64 /cu. yd =	$11

Rock total = $8,245

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	No/Length (ft)	Installed Cost/ft	Sub-total
	2	CPP	18	28	$11.80	$661
	1	CPP	18	50	$11.80	$590

Bands & Gaskets — 4 - 18" bands @ $9.90 each — $40

Culvert total = $1,290

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total

Structure total = $0

Sub-TOTAL = $14,463

VI. GENERAL EXPENSES: Overhead & General Exp. Add 10% $1,446

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	$100	6	$600
Grader	$400	1	$400
Compactor	$400	1	$400
Excavator	$450	1	$450
Dozer D8)	$400	1	$400
Front end loader	$400	1	$400
Rock crusher	$1,500	0	$0
Dozer (D5)	$240	0	$0

Total Mobilization = $2,650 Mobilization sub-total = $1,325

Road No. RCP 1100, RCP 1120, RCP 1200
Standard: Secondary Mainline (12' R.S.)
Stations: 31.12

SHEET TOTAL = $17,235

By: M. Miskovic Sheet 3 of 3 Date: 01/27/04